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THE *TRICHADENOTECNUM* GROUP (PSOCOPTERA: PSOCIDAE) IN HONG KONG, WITH DESCRIPTIONS OF NEW SPECIES

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With 40 Text-figures

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I. Introduction

In the course of a taxonomic survey of the Psocoptera of Hong Kong, the Psocidae have already been dealt with (Thornton, 1960) except for species of the *Trichadenotecnum* group, which are treated separately here. The status and limits of this taxon have not yet been satisfactorily defined, and the somewhat aberrant nature of many of the new species described below raises new problems.

Nyholm (1952) has discussed the taxonomic situation with respect to the European species, and has pointed out that while Enderlein's genera *Trichadenotecnum* Enderlein (1909) and *Loensia* Enderlein (1924) are distinct as far as the European fauna is concerned, Roesler's discovery of intermediate neotropical forms led him to unite the two species groups as subgenera of one genus, *Trichadenotecnum* Enderlein (1909) *sensu lato* (Roesler, 1943). In the present situation, with North American representatives of this family currently under revision, I propose to adhere to this scheme, and accordingly have assigned the new species described below to the genus *Trichadenotecnum, sensu* Roesler.

Seven holarctic species have been sufficiently well studied for them to be assigned to a compact homogeneous group referable to Roesler's sub-genus *Trichadenotecnum* End. *sensu stricto*. They are *T. sexpunctatum* (L.) (the type species of Enderlein's original genus), *T. majus* (Kolbe (1880)), *T. germanicum* Roesler (1939*a*), and *T. incognitum* Roesler (1939*b*) from Europe, and *T. slossonae* (Banks (1903)), *T. unum* Sommerman (1948), and *T. alexanderae* Sommerman (1948) from North America. The species in this group share the following characters of the fore wing: veins *r* and *m* united for a short distance; areola postica scalene, cu_1 strongly bent back towards the wing margin (except *T. germanicum*); a submarginal row of five or six spots in the apical cells, elsewhere clouds and/or spots. They also all possess a median tongue on the hypandrium, and some processes on the distal margin of the hypandrium. The phallic frame is roughly cordiform, without mid-lateral spikes, that of *T. unum* being somewhat unusual. Roesler erected a subgenus *Trichadenopsocus* for *Psocus desolatus* Chapman (1930) which differs in having no submarginal row of spots on the fore wing.

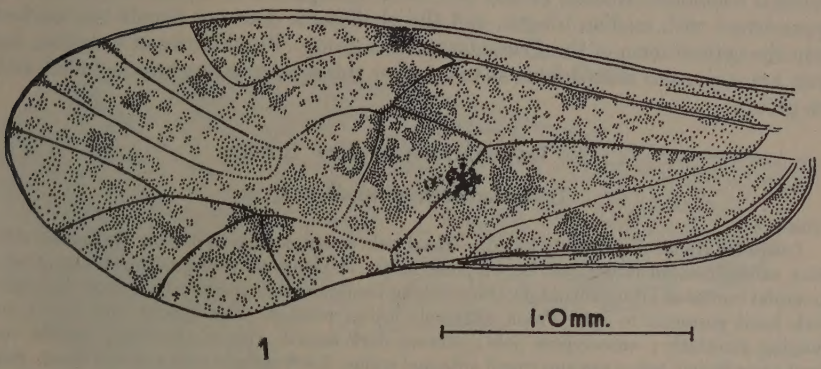
This seems somewhat premature, since nothing is known of its complete venational pattern (the fore wing was not figured by Chapman). Other species which are probably related to this group are *T. circulare* (Hagen (1859)) and *T. quinquepunctatum* (McLachlan (1872)) from Ceylon, *T. sexpunctellum* (Enderlein (1907*a*)) from Japan, and *T. minutum* Enderlein (1926) from Java. *T. obsitum* (Enderlein (1908)) from Formosa is probably best placed here, although like *T. desolatum* (Chapman) the fore wing pattern is not strictly conformable. *Psocidus enderleini* Roesler (1943) (=*Psocus conspurcatus* Enderlein (1903)), from Australia, has the areola postica scalene but a light sprinkling of spots with no submarginal row in the forewing. The Angola species *T. pardoides* Badonnel (1955) and *T. pardus* Badonnel (1955) are also possibilities, although in neither species is the row of submarginal spots evident. *T. pardus*, described from the female only, has somewhat peculiar gonapophyses, and *T. pardoides* has the areola postica less scalene, subgenital plate process rather elongate, and a hypandrium which lacks the median tongue. The remaining Angola species, *T. circularoides* Badonnel (1955) and *T. angolensis* Badonnel (1955) are of more uncertain affinities, although both possess the submarginal row of spots in the fore wing.

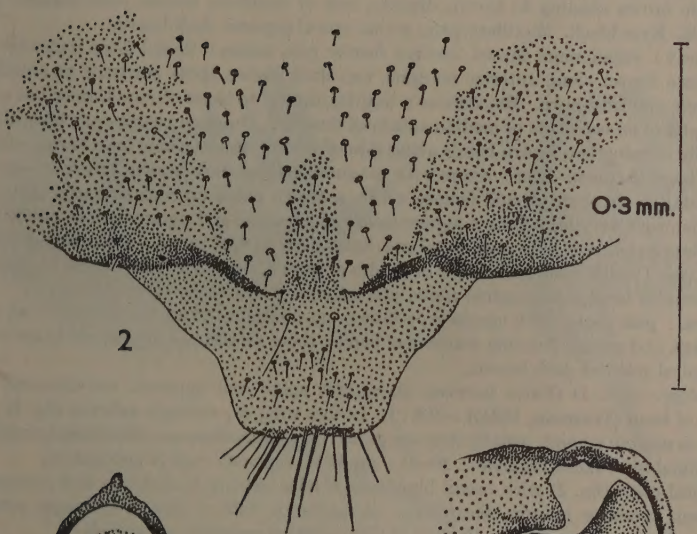
A second holarctic group, comprising *T. fasciatum* (Fabricius (1787)) (the type species of Enderlein's genus *Loensia*), *T. variegatum* (Latreille (1799)) and *T. pearmani* Kimmins (1941) (=*picicorne* Steph. 1836) from Europe, and *T. moestum* (Hagen (1861)) and *T. maculosum* (Banks (1908)) from North America, have the areola postica scalene, cu_1 running almost vertically to the margin, no submarginal row of spots, elsewhere clouds and/or spots. The hypandrium bears a median long strap (sometimes two), slightly narrowed apically and incurved, and is without processes on the distal margin. The outline of the phallic frame is flask-shaped, with a spiky process about midway on each side. These species can be included in Roesler's sub-genus *Loensia*. The species *Loensia bicolor* (Enderlein (1900)), *L. hemiphaeoptera* (Enderlein (1900)), *L. nubila* (Enderlein (1906)), *L. denticulata* (Enderlein (1910)) and *L. formosa* (Banks (1918)) are clearly unrelated to the group as here defined. The positions of *Psocus irroratus* Enderlein (1907*b*), *L. glabridorsum* Enderlein (1926) and *L. fuscimacula* Enderlein (1926) are uncertain because of insufficient data, and that of *Psocus burgeoni* Navas (1936) cannot be assessed since the data are practically worthless.

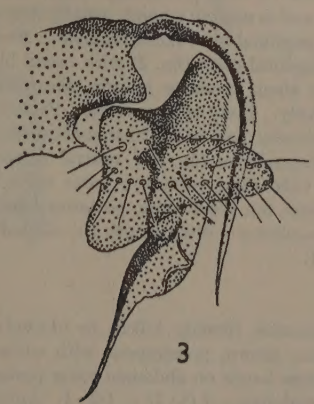
Roesler (1943) placed his new species *continuatus* from Brazil in a new sub-genus, *Psocomesites*. The female gonapophyses are reasonably conformable to the *Loensia* type, the subgenital plate is attenuated at the apex, and the forewing, while having venation similar to the *Loensia* group, in pattern of pigmentation is closer to the *Trichadenotecnum* group. The phallosome is *Loensia*-like and the hypandrium is somewhat intermediate, bearing an incurved strap and a structure which may be homologous with the median tongue of the *Trichadenotecnum* group.

A group of four North American species can be delineated where the fore wing is unmarked either wholly or in the apical half and the areola postica is four-sided, the hypandrium, but not the phallosome, being similar to that of the *Loensia* group. *Psocus striatus* Walker (1853) and *P. floridanus* Banks (1905) may well be congeneric, as may *P. bisignatus* Banks (1904) and *P. infumatus* Banks (1907). The two pairs of species differ slightly in venation, form of phallic frame, and type of subgenital plate.

Oreopsocus montanus (Kolbe (1884)), *Psocus atratus* Aaron (1884), *P. pollutus* Walsh (1862) and *Copostigma indicum* Enderlein (1903) must all be considered with regard to this assemblage. *O. montanus* has *Loensia*-type venation but the wings are completely unmarked. The hypandrium is peculiar but the phallic frame and female genitalia show possible relationships with those of the *Loensia* group. *P. atratus* and *P. pollutus* show some resemblance to the *Loensia* group in venation, but the wings are extensively clouded with no spotting. They are described from females only. While the subgenital plate of *atratus* suggests relationship with *Loensia*, that of *pollutus* does not. *C. indicum* has venation conformable with the *Trichadenotecnum* group except for a spur vein on the pterostigma ; its relationship must remain uncertain.







FIGS. 1–4.—*Trichadenotecnum medium* sp. n. (1–3) Female : (1) fore wing ; (2) subgenital plate ; (3) gonapophyses ; (4) Male, phallosome. (Figs. 2–4 have common scale).

Psocidus badonnelli Roesler (1943) (=*Psocus multipunctatus* Badonnel (1932)) has a hypandrium with median tongue, and the phallosome does not depart too markedly from the typical form of the *Trichadenotecnum* group. Peculiarities of venation, however, are such as to raise doubts as to whether this species is properly included within the group.

II. Descriptions of New Species

Trichadenotecnum medium sp. n.

Female

Coloration (in alcohol, freshly killed).—Head pale cream, markings brown. Epicranial sutures faint, except median suture dark brown posteriorly. Markings on vertex of brown bands parallel to mesial border of orbit, a band on either side of median suture posteriorly, a short longitudinal dark band posterior to eye. Frons with four brown patches. Postclypeus with brown striae merging anteriorly; anteclypeus pale; labrum dark brown. Genae white with narrow brown band immediately below eye and round antennal socket, lower margin with a brown band. Antennae with scape brown, pedicel brown in proximal half, pale cream in distal half, first flagellar segment pale brown shading to brown distally, rest of flagellum brown, each segment pale at extreme ends. Eyes black. Maxillary palpi white, apical segment dark brown.

Mesothorax: antedorsum brown, median furrow pale cream; dorsal lobes yellowish cream, dark chocolate brown along anterior margins, two dark brown spots posterior to antedorsum; scutellum pale greyish-brown. Metathorax: tergites similar to those of mesothorax but a narrow dark brown band on each side of median suture of dorsum. Thoracic pleura dark brown dorsally and ventrally forming two brown bands along side of thorax, upper wider than lower, with broad pale cream band between. Legs: coxae with proximal sutures dark brown, brown basally fading to white distally; trochanters and femora white, a brown patch on each side near distal end of femur; tibiae with very faint brown pigmentation at proximal end (more distinct on fore tibiae), a more distinct patch each side near distal end, hairs sited on dark spots; tarsal segments brown. Fore wings (fig. 1) with spots and clouds of shades of brown, density of small spots variable, three to five discernible large sub-marginal spots, pterostigma yellowish by reflected light.

Abdomen: pale cream with sparse grey-brown granulations, denser at posterior and anterior edges of terga and sterna, forming transverse bands, these sometimes broken medially on dorsal surface; apical sclerites dark brown.

Morphology.—I.O.: D (Ratio between interocular space and apparent eye-diameter as seen from front of head (Pearman, 1934)) =2·8 : 1. In fore wing cu_1 strongly reflexed (fig. 1); in one case *rs* and *m* meet in a point, usually they are joined for a short distance. Number of ctenidiobothria on proximal hind tarsal segment: 20–21; on distal segment: nil (4 specimens).

Subgenital plate (fig. 2) with broad blunt apical lobe bearing four strong and numerous fine bristles along posterior margin, short setae on posterior half of lobe, two longer setae more posteriorly. Body of plate setose. Pattern of pigmentation constant, as figured.

A circular field of 21–22 trichobothria on each paraproct.

Gonapophyses (fig. 3): ventral valve (1st valvula) extending to about two-thirds length of dorsal valve (2nd valvula); outer valve (3rd valvula) with a row of fairly long setae, two long and about ten short setae, posterior lobe bare.

Dimensions.—Body length (in alcohol): 2·4–3·0 mm. Dimensions of other characters as in Table I.

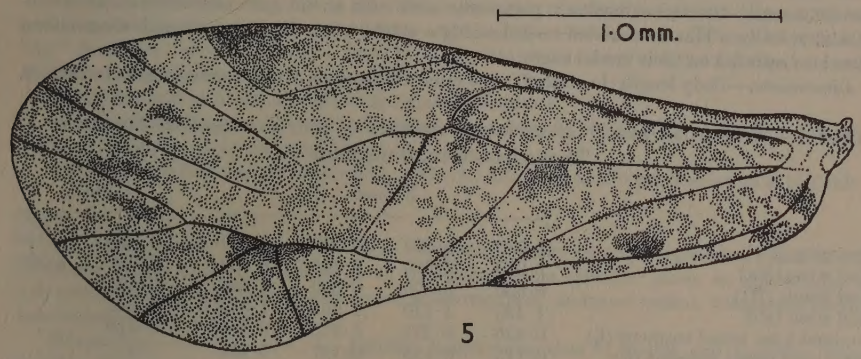
Male

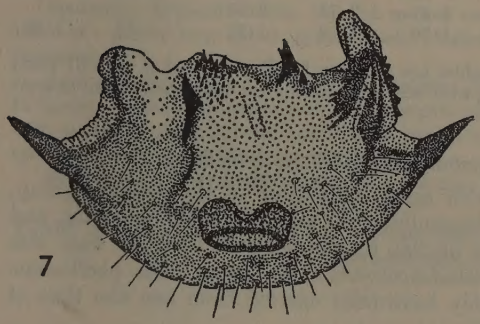
Coloration (freshly killed, in alcohol).—As female, except scape and pedicel dark brown, flagellum brown, postclypeus with white lateral patches, anterior femur uniform light brown, transverse bands on abdomen cover posterior two-thirds of each tergum, narrowing laterally.

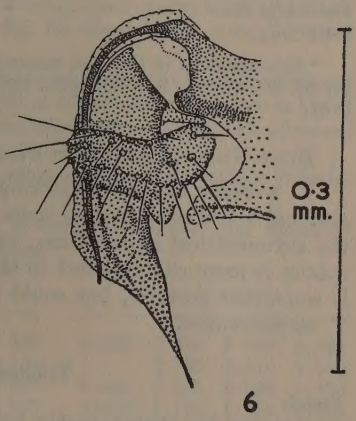
Morphology.—I.O.: D = 1·2 : 1. Antennal flagellum thicker than that of female, with fairly long setae (twice greatest width of basal segment).

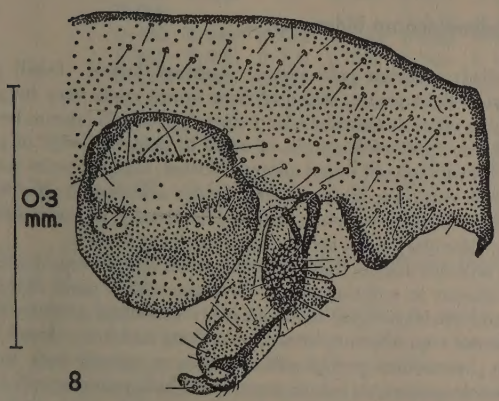
Wings somewhat more bluntly rounded at apex than those of female. Number of ctenidiobothria on proximal segment of hind tarsus: 23; on distal segment: nil (one specimen).

Genitalia: hypandrium (fig. 7) with short bilobed median tongue; asymmetrical spines and projections near posterior margin, pattern of sclerotisation asymmetrical. Phallosome with small postero-lateral projections, two large stout posterior extensions beset with spines on their mesial faces (fig. 4).









FIGS. 5–8.—(5–6) *Trichadenotecnum bidens* sp. n.: (5) fore wing of male ; (6) female gonapophyses. (7–8) *T. medium*, male : (7) hypandrium, posterior view ; (8) apex of abdomen. (Figs. 6 and 7 have common scale).

Apex of abdomen (fig. 8): epiproct with a median oval lightly sclerotised area posteriorly which bears chitinous papillae, two smaller such areas anteriorly each with about five setae, an anterior dorsally-directed extension; paraprocts each with an elongate sense-field of 21 trichobothria, apically a bluntly rounded hook bearing a single seta; ninth tergite with short lateral extensions serrated on their mesial edges.

Dimensions.—Body length (in alcohol): 2·8 mm. Dimensions of other characters as in Table I.

TABLE I.—*Length (in mm.)* of various characters of four females and two males of* Trichadenotecnum medium

	Female				Male	
Fore wing (*Fw*)	2·630	3·030	3·090	3·260	2·990	3·140
Hind wing (*Hw*)	1·970	2·290	2·340	2·430	2·200	2·370
Hind femur (*Hf*)	0·550	0·570	0·590	0·620	0·590	.
Hind tibia (*Ht*)	1·130	1·170	1·255	1·345	1·285	.
Proximal hind tarsal segment (t_1)	0·335	0·335	0·375	0·390	0·410	.
Distal hind tarsal segment (t_2)	0·115	0·135	0·137	0·151	.	.
Antenna (*A*)	.	.	.	2·170	2·890	3·000
Basal flagellar segment (f_1)	0·420	0·415	0·455	0·500	0·575	0·645
Second flagellar segment (f_2)	0·320	0·320	0·390	0·410	0·490	0·515
Ratio t_1/t_2	2·90	2·47	2·75	2·57	.	.
Ratio f_1/f_2	1·31	1·30	1·18	1·22	1·18	1·25

* Measurements in this and succeeding tables are accurate for *Fw*, *Hw* and *A* to 0·01 mm.; for *Hf*, *Ht*, t_1, f_1, f_2, to 0·005 mm., and for t_2 to 0·002 mm. Ratios are calculated to the nearest 0·01.

HONG KONG ISLAND: On *Pinus massoniana*, xii.57; i, ii, iii.58.

T. medium has wing markings which agree with those of the *Loensia* group, although a few sub-marginal spots are discernible. The venation of the fore wing, and the asymmetrical hypandrium, with its median tongue, suggest, however, that this species is more closely allied to the *Trichadenotecnum* s. str. group. The phallosome is somewhat peculiar, but could possibly have been derived from one like that of *T. sexpunctatum*.

Trichadenotecnum bidens sp. n.

Female

Coloration (in alcohol, freshly killed).—Vertex pale cream, markings brown. Ocelli pale, ocellar protuberance black. Postclypeus light cream, striae of dark brown spots very irregular posteriorly, semicircular area of merging spots at anterior edge; anteclypeus and labrum brown. Genae white with dark brown band from posterior margin of orbit to posterior edge of gena, lighter brown border below eye, dark brown pigment round antennal socket, along anterior margin of gena, and forming a curve above lower margin to enclose a semicircular white patch. Scape and pedicel of antenna brown, white distally, flagellar segments brown, pale distally, so that flagellum appears regularly banded. Eyes grey. Maxillary palpi brown, apical segment darker.

Mesothorax: antedorsum brown, anterior margin darker, a paler arrow-shaped area medially; dorsal lobes brown, a paler patch adjacent to anterior suture confluent with a more ill-defined patch on body of dorsum, posterior and mesial margins bordered pale; scutellum greyish-yellow, anterior margin dark brown. Metathorax: antedorsum brown, pale along mid-line; dorsal lobes brown, pale along posterior margin; scutellum greyish-yellow, anterior margin dark brown. Thoracic pleura dark brown, mesothoracic episternum pale cream in lower half, epimere similar with narrow dark brown band along lower edge. Legs: generally dark brown, pale cream at joints; anterior femora pale cream with dark brown bands near ends; proximal tarsal segment pale brown distally, otherwise tarsus dark brown. Fore wings with greyish-brown spots and larger clouds of brown.

Abdomen: yellow, with narrow diffuse granulated grey-brown transverse bands dorsally, broader and more distinct ventrally. Epiproct and paraprocts pale cream, sense-fields brown.

Morphology.—I.O.: D = 3·0 : 1. Setae on flagellum about twice as long as greatest width of basal segment.

Fore wing with cu_1 reflexed, *rs* and *m* fused for a short distance. Number of ctenidiobothria on proximal hind tarsal segment : 17–22 ; on distal segment : 2 (6 specimens).

Subgenital plate (fig. 9) : apical lobe with a posterior marginal row of four large stout setae and numerous smaller ones, a few small setae and two large ones in centre of lobe, lobe with papillose " shoulders " antero-laterally ; main body of plate setose except antero-medially, two wedge-shaped sclerotised areas.

A circular field of 21–22 trichobothria on each paraproct.

Gonapophyses (fig. 6) : ventral valve extending for about two-thirds length of dorsal valve ; outer valve setose, short posterior lobe bare.

Dimensions.—Body length (in alcohol) : 2·3 mm. Dimensions of other characters as in Table II.

Male

Coloration (freshly killed, in alcohol).—Generally more heavily pigmented than female ; otherwise differs in lack of cream patch on mesothoracic epimere, patch on episternum less extensive, thoracic terga darker and cream areas narrower, abdomen yellow, transverse banding not evident even ventrally.

Morphology.—I.O.: D = 0·7 : 1. Antenna longer than that of female and flagellum almost twice as thick basally, with setae about four times greatest width of basal segment.

Fore wing as in figure 5. Number of ctenidiobothria on proximal hind tarsal segment : 19–21 ; on distal segment : 2 (4 specimens).

Genitalia : hypandrium (fig. 11) with median tongue covering a pair of very small spines and bases of a pair of large spines, symmetrical. Phallosome (fig. 10) closed, a pair of rounded lobes posteriorly.

Apex of abdomen (fig. 12) : epiproct with large dorsal extension posteriorly (laterally displaced in figure), setose ; paraprocts each with elongate sense field of 26 trichobothria, setose in apical half, apically a sharp curved hook ; ninth tergite with long lateral extensions in form of curved spines bearing two serrations on mesial edges.

Dimensions.—Body length (in alcohol) : 2·2 mm. Dimensions of other characters as in Table II.

TABLE II.—*Length (in mm.) of various characters of six females and four males of* Trichadenotecnum bidens

	Female						Male			
Fw	2·690	2·600	.	2·570	2·910	2·860	2·850	2·930	3·040	2·800
Hw	2·000	.	.	.	2·170	2·150	.	2·250	2·310	2·070
Hf	0·430	0·445	0·445	0·430	0·505	0·490	0·495	0·505	0·520	0·470
Ht	0·935	0·935	0·900	0·910	1·065	0·985	1·075	1·115	1·105	1·035
t_1	0·240	0·260	0·265	0·275	0·310	0·285	0·310	0·360	0·365	0·320
t_2	0·107	0·107	0·110	0·113	0·110	0·113	0·112	0·110	0·117	0·114
A	.	.	.	2·040	2·030	.	2·310	.	.	.
f_1	0·390	0·395	.	0·390	0·510	0·435	0·565	0·545	0·610	0·520
f_2	.	0·355	.	0·330	0·500	0·385	0·520	0·505	0·545	0·490
Ratio t_1/t_2	2·26	2·41	2·40	2·46	2·83	2·50	2·76	3·26	3·12	2·81
Ratio f_1/f_2	.	1·11	.	1·19	1·02	1·13	1·09	1·09	1·11	1·06

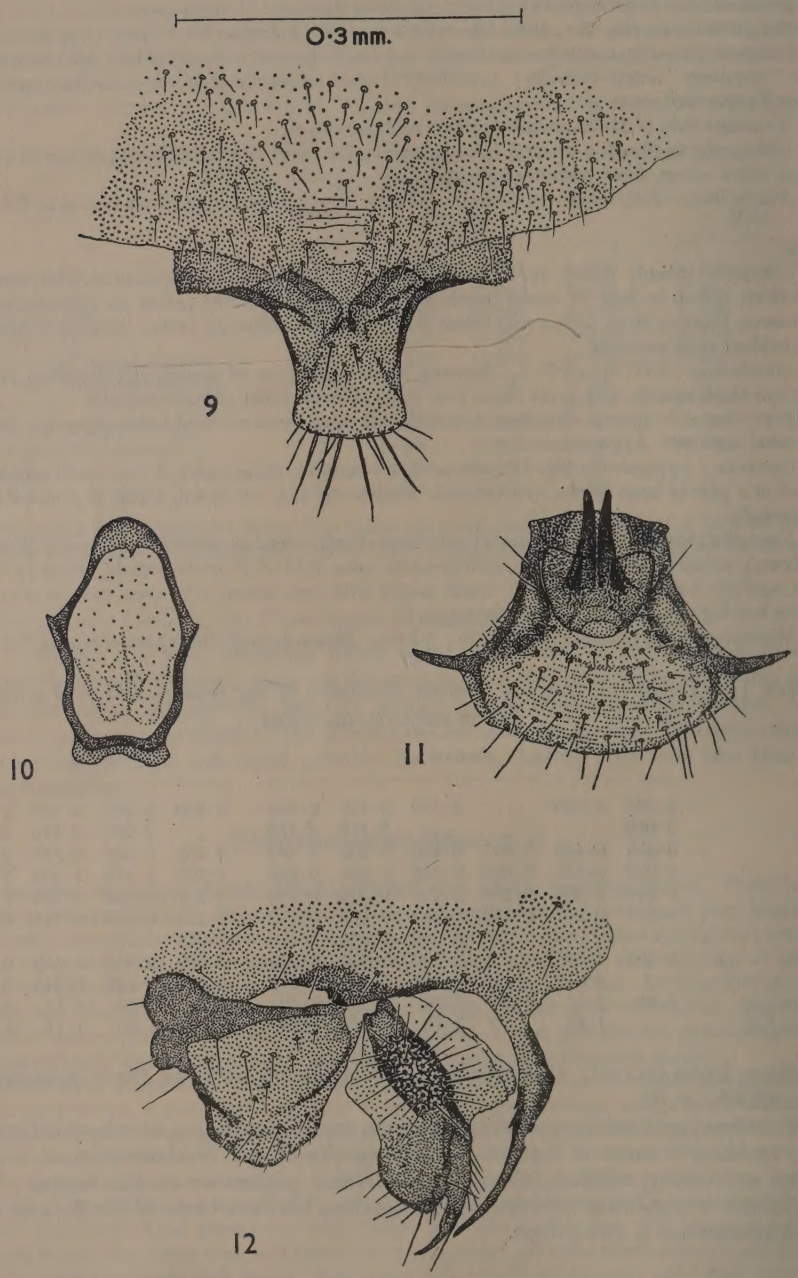
HONG KONG ISLAND : On *Sterculia lanceolata*, *Gnetum scandens*, *Pinus massoniana*, i, xi, xii.58 ; v.60.

T. bidens has *Loensia*-type wing markings, with a suggestion of sub-apical spots. The venation is more in conformity with species of the *Trichadenotecnum* s. str. group, and the hypandrium, although symmetrical, possesses a median tongue. The phallosome is somewhat intermediate in structure between those of the *Loensia* and *Trichadenotecnum* s. str. groups.

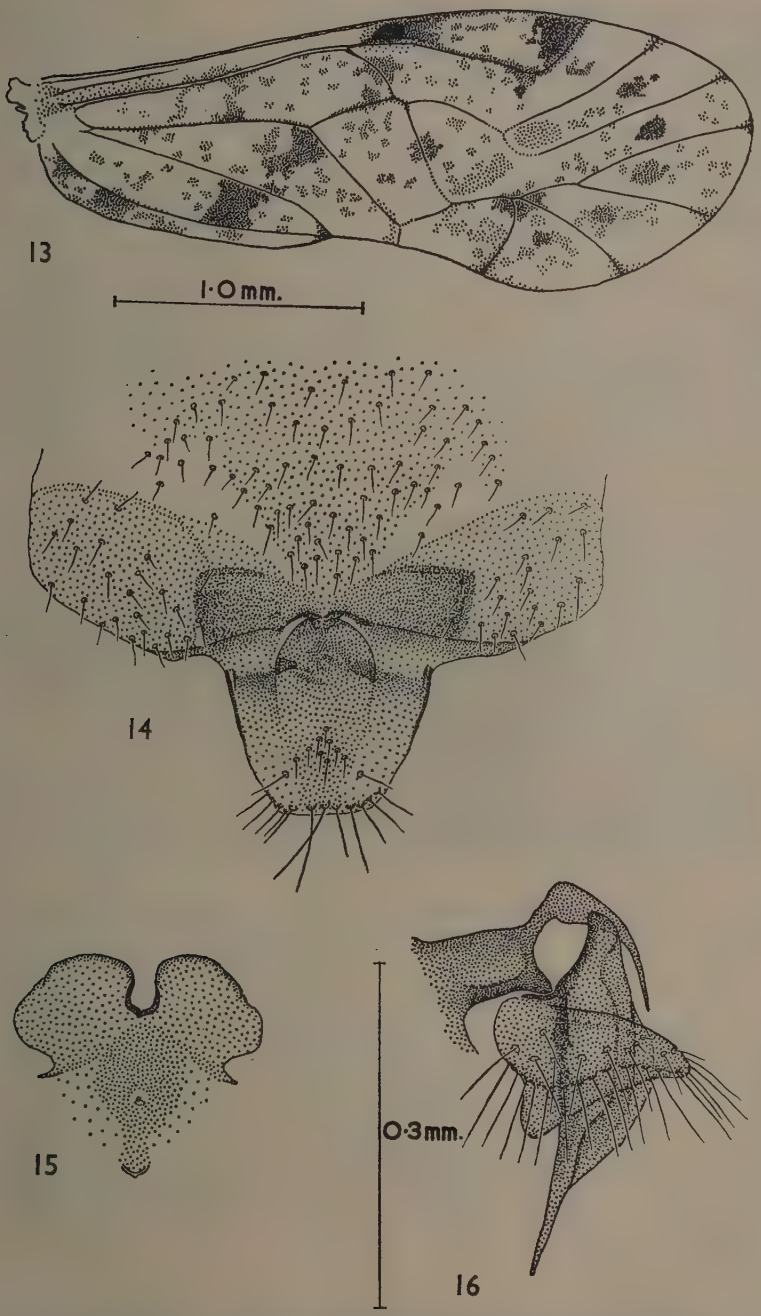
Trichadenotecnum apertum sp. n.

Female

Coloration (freshly killed, in alcohol).—Head generally very pale cream, almost white. Vertex with lines of dark brown spots medially and posteriorly, a somewhat larger spot on each side of ocellar protuberance posteriorly. Ocelli pale, edged with black on central borders. Frons with



FIGS. 9–12.—*Trichadenotecnum bidens*. (9) Female, subgenital plate. (10–12) Male: (10) phallosome; (11) hypandrium, posterior view; (12) apex of abdomen. (Common scale).



Figs. 13–16.—*Trichadenotecnum apertum* sp. n., female : (13) fore wing ; (14) subgenital plate ; (15) gonopore plate ; (16) gonapophyses. (Figs. 14–16 have common scale.)

a pair of small dark streaks near middle of anterior border ; another pair lateral to these and more posterior, dark brown laterally. Postclypeus with grey-brown striae very indistinct posteriorly, merging and darkening antero-medially leaving a round pale cream area on either side anteriorly. Anteclypeus and labrum dark brown. Genae edged with brown round antennal socket, a narrow brown band along lower margin. Antenna with scape and pedicel brown, first flagellar segment faint brown shading distally to brown, rest of flagellum brown. Eyes dark grey. Maxillary palpi pale grey-brown, apical segment dark brown.

Mesothorax : antedorsum dark brown anteriorly fading to pale cream posteriorly ; dorsa very pale cream, anteriorly edged dark brown, dark brown patches postero-medially and postero-laterally, posterior suture dark brown ; scutellum very pale cream with brown median band. Metathorax : antedorsum dark brown ; dorsa dark brown, pale cream areas antero-laterally and postero-medially ; scutellum dark brown, sutures very dark. Mesothoracic episternum and epimere dark brown in upper half, pale cream below ; antecoxa dark brown. Postnotum brown. Episternum and trochantin of metathorax dark brown, unsclerotised regions pale cream. Thorax laterally thus appears to have two longitudinal pale cream bands alternating with two brown bands. Legs : coxae brown basally fading to white distally (except anterior coxae almost wholly white) ; trochanters white ; femora white, ringed with brown subdistally ; tibiae colourless, banded brown subdistally, a distinct brown band near proximal end of fore tibia, faint in middle tibia, absent in hind tibia ; tarsi brown, apical segment darker. Fore wings (fig. 13) spotted with shades of brown, six distinct submarginal spots ; hind wings hyaline, veins pale, tip of r_1 brown and wing here faintly clouded brown.

Abdomen : pale cream, broad transverse bands of grey-brown granulations disappearing medially on ventral surface. Apical sclerites dark brown.

Morphology.—I.O.: D = 2·3 : 1. Length of flagellar setae approximately one and a half times greatest width of basal segment.

Fore wing (fig. 13) with cu_1 strongly reflexed, *rs* and *m* fused for a short distance. Number of ctenidiobothria on proximal hind tarsal segment : 21–24 ; on distal segment : 2 (4 specimens).

Subgenital plate (fig. 14) : apical lobe bluntly rounded with a row of setae along posterior margin, a triangular field of setae just anterior to margin, otherwise bare ; main body of plate with a bare heavily sclerotised area and three distinct setose, less sclerotised areas.

A circular field of trichobothria on each paraproct.

Gonapophyses (fig. 16) : ventral valve short, not reaching level of outer valve ; outer valve with posterior lobe.

Gonopore plate (fig. 15) well sclerotised anteriorly.

Dimensions.—Body length (in alcohol) : 2·4 mm. Dimensions of other characters as in Table III.

TABLE III.—*Length (in mm.) of various characters of four females and four males of* Trichadenotecnum apertum

	Female				Male			
Fw	3·380	3·490	3·270	2·900	3·240	3·380	2·960	3·090
Hw	2·620	.	2·480	2·180	2·440	2·560	2·270	2·320
Hf	0·615	0·615	0·595	0·550	0·575	0·575	0·585	0·530
Ht	1·280	1·350	1·225	1·030	1·260	1·225	1·260	1·150
t_1	0·365	0·370	0·345	0·300	0·355	0·345	0·365	0·320
t_2	0·134	0·131	0·136	0·112	0·124	0·117	0·131	0·124
A	3·160	.	.	.	.	2·960	3·160	3·010
f_1	0·610	0·585	0·510	0·510	0·585	0·550	0·565	0·615
f_2	0·495	0·495	0·430	.	0·485	0·475	0·495	0·495
Ratio t_1/t_2	2·72	2·82	2·52	2·66	2·86	2·93	2·79	2·58
Ratio f_1/f_2	1·22	1·18	1·18	.	1·21	1·16	1·13	1·23

Male

Coloration (freshly killed, in alcohol).—As female, with following exceptions : striae on vertex less distinct, fusing into an irregular shape ; abdomen without transverse bands.

Morphology.—I.O.: D = 0·7 : 1. Flagellum slightly thicker than that of female, thickly covered with off-standing setae, length of setae approximately three and a half times greatest width of basal segment.

Number of ctenidiobothria on proximal hind tarsal segment : 19–21 ; on distal segment : 2 (4 specimens).

Genitalia : hypandrium (fig. 18) asymmetrical, without median tongue, a group of very stout setae medially, a pair of lateral fields of very close-set short spines, asymmetrical serrated extensions and a large stout spine near margin. Phallosome (fig. 19) open posteriorly, shaped like the furcula bone of a chicken, " radula " prominent.

Apex of abdomen (fig. 17) : epiproct with very few setae and a posterior dorsally directed chitinous extension ; paraprocts with distal sharply-bent hook, an oval field of 26 trichobothria ; ninth tergite with large, complex, axe-shaped lateral extensions to posterior edge (fig. 20).

Dimensions.—Body length (in alcohol) : 2·3 mm. Dimensions of other characters as in Table III.

Hong Kong Island : On *Pinus massoniana*, *Podocarpus macrophylla*, *Litsea chinensis*, *Casuarina equisetifolia*, xi, xii.57 ; xi, xii.58 ; i, iv.60.

T. apertum, in wing markings and venation, agrees with species of the *Trichadenotecnum* s. str. group, but the tongue to the hypandrium is lacking. The phallic frame is unusual in being open apically. It is possible that this species typifies a new generic form.

Trichadenotecnum arciforme sp. n.

Male

Coloration (freshly killed, in alcohol).—Vertex very pale cream with symmetrical brown markings of distinct spots. Ocelli pale, bordered black centrad. Frons pale, dark brown laterally. Postclypeus white, unmarked posteriorly, striae of well-separated light grey-brown spots, anteriorly in mid-line a dark brown band broadening towards anterior margin and separating two large white areas. Anteclypeus and labrum dark brown. Genae very pale cream, pale brown mark from eye to about middle of gena, suture of antennal socket dark brown. Antenna with scape and pedicel brown, first flagellar segment almost colourless shading to pale brown distally, rest of flagellum pale brown. Eyes black, ommatidia bordered grey. Maxillary palpi pale, apical segment brown.

Mesothorax : tergites very pale cream except antedorsum brown anteriorly ; scutellar sutures dark. Metathorax : antedorsum and scutellum pale cream, dorsa faint brown with paler area posteriorly. Thoracic pleura banded cream and brown. Legs : coxae brown fading to white distally ; trochanters and femora white, a brown band near distal end of femur ; tibiae white, faint brown ring near distal end ; tarsi brown, except proximal segment of metatarsus light brown. Fore wings (fig. 21) with light brown clouds, six distinct brown submarginal spots. Hind wings hyaline.

Abdomen : pale cream, with narrow transverse granulated bands.

Morphology.—I.O.: D = 0·8 : 1. Length of setae on basal segment of flagellum approximately two and a half times greatest width of segment.

Fore wing (fig. 21) with cu_1 strongly reflexed, *rs* and *m* fused for a short distance. Number of ctenidiobothria on proximal hind tarsal segment : 23.

Genitalia : hypandrium (fig. 25) symmetrical basally, with asymmetrical hooks and extensions distally. Tongue to hypandrium lacking. Phallic frame (fig. 24) almost closed, coffin-shaped, papillose anteriorly.

Apex of abdomen : epiproct (fig. 23) bare, angular ; paraprocts (fig. 22) with distal hook bearing a number of setae basally, a very short bristle on mesial surface of paraproct near base of hook, a circular field of 23 trichobothria ; ninth tergite laterally with subspherical spinous lobes overlapping base of a short peg-like posterior extension (fig. 26).

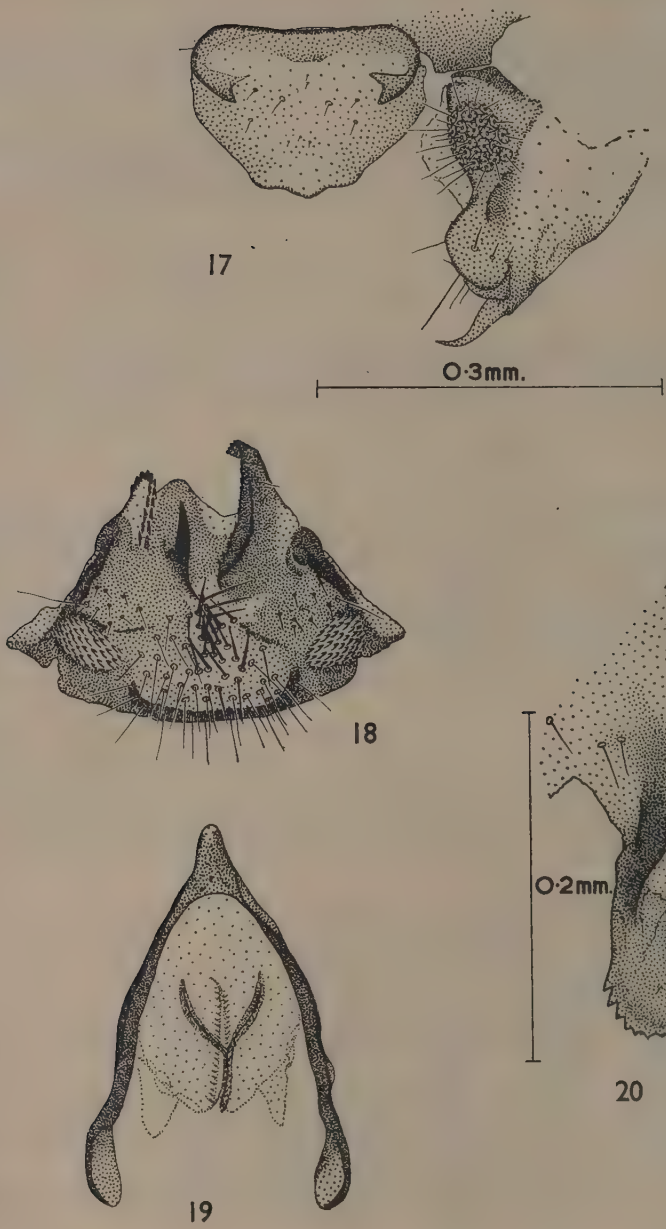
Dimensions.—Body length (in alcohol) : 2·2 mm. Dimensions of other characters as in Table V.

Female

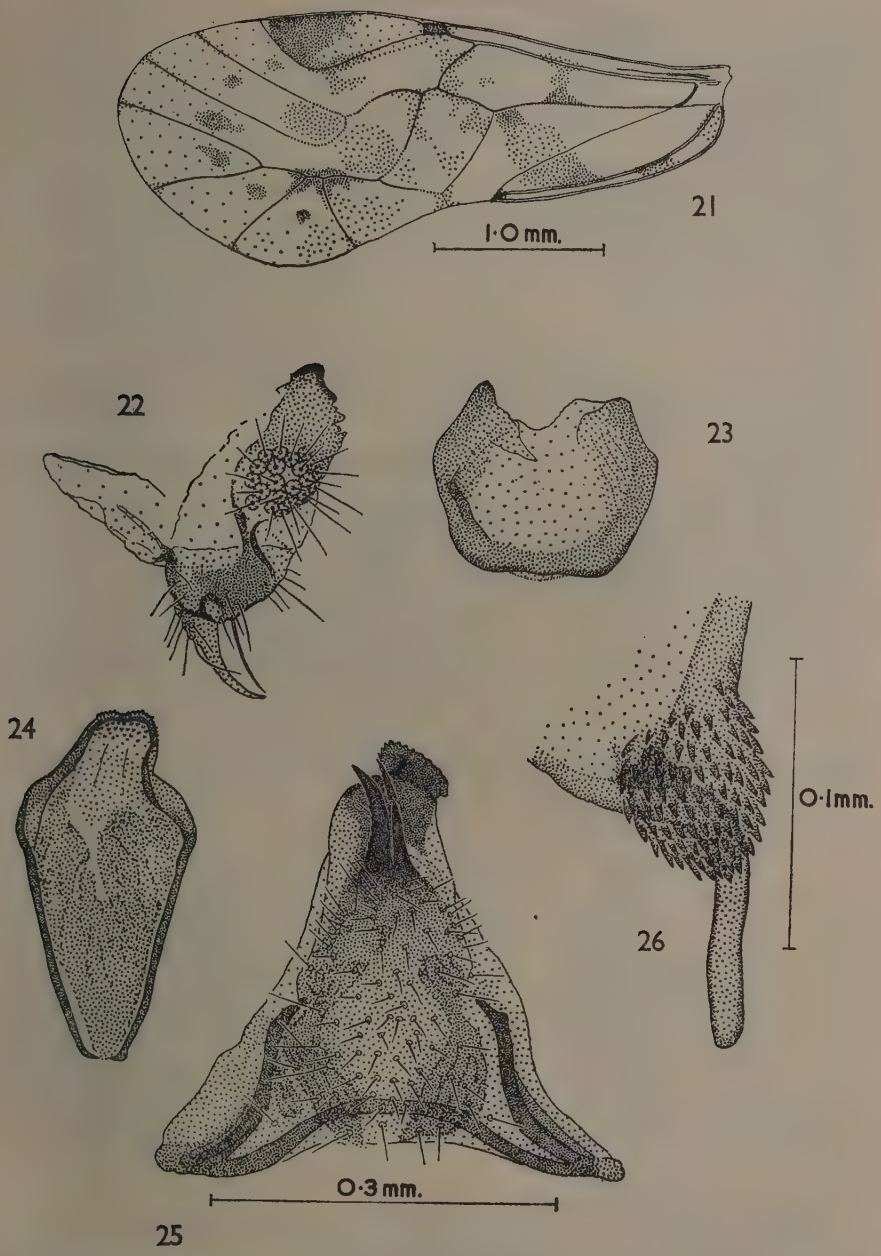
Unknown.

Hong Kong Island : Beating broad-leaved shrubs, i.58. One male only.

In *T. arciforme* the fore wing is clearly of the *Trichadenotecnum* s. str. type, but the long pointed hypandrium, without tongue, is highly peculiar. The phallosome is not easily comparable with that of any other species.



Figs. 17–20.—*Trichadenotecnum apertum*, male: (17) apex of abdomen; (18) hypandrium, posterior view; (19) phallosome; (20) lateral extension of ninth abdominal tergite. (Figs. 17–18 and 19–20 have common scales.)



Figs. 21–26.—*Trichadenotecnum arciforme* sp. n., male : (21) fore wing ; (22) paraproct ; (23) epiproct ; (24) phallosome ; (25) hypandrium ; (26) lateral extension of ninth abdominal tergite. (Figs. 22–25 have common scale).

Trichadenotecnum nudum sp. n.

Female

Coloration (in alcohol, freshly killed).—Head pale cream, markings brown. Vertex with distinct oval greyish-brown spots and anteriorly with wide dark brown border, epicranial suture dark brown posteriorly. Frons with median dark brown triangular patch and two lateral smaller patches. Postclypeus with striae of confluent dark brown spots, merging medially in anterior half, a transverse dark brown band from one antennal socket to the other. Anteclypeus white, labrum dark brown. Genae with a pale brown band below eye extending to antennal socket, a wide dark brown band extending across gena towards lower margin. Antennae with scape and pedicel light brown, first flagellar segment light brown basally darkening distally, rest of flagellum dark brown. Eyes black, ommatidia bordered grey. Maxillary palpi pale, apical segment brown.

Thoracic terga brown ; pleura brown, a darker brown lateral band above coxae. Legs : coxae brown basally, colourless distally ; trochanters and femora colourless, femora marked with brown near distal end (darkest in hind femur) ; tibiae very pale brown, hairs sited on brown spots ; proximal segment of tarsi pale, palest on hind tarsus, otherwise tarsi brown. Fore wing (fig. 27) marked with dark brown, clouds in outer cells sometimes separated as large spots.

Abdomen : yellow-brown with granulated bands along anterior border of each tergum merging medially to form a longitudinal band in well-pigmented specimens. Abdomen apically dark brown, epiproct yellow.

Morphology.—I.O.: D = 3·5 : 1. Length of flagellar setae on basal segment only slightly greater than greatest width of segment.

In fore wing cu_1 reflexed, *rs* and *m* fused for a short distance. Number of ctenidiobothria on proximal hind tarsal segment : 16–23 ; on distal segment : 3 (16 specimens).

Subgenital plate (fig. 28) : apical lobe with a marginal row of setae, not distinct from main plate. Body of plate uniformly setose, with distinct symmetrical sclerotised areas.

Gonapophyses (fig. 29) : ventral valve almost reaching tip of dorsal valve. Outer valve with posterior lobe.

Gonopore plate large (fig. 30).

Dimensions.—Body length (in alcohol) : 2·3 mm. Dimensions of other characters as in Table IV.

TABLE IV.—*Length (in mm.) of various characters of* Trichadenotecnum nudum

	FEMALE			MALE		
	Number of specimens	Range (mm.)	Mean ± S.D. (mm.)	Number of specimens	Range (mm.)	Mean ± S.D. (mm.)
Fw	18	2·550–3·340	2·872±0·192	6	2·730–3·040	2·930±0·105
Hw	16	1·940–2·540	2·186±0·134	6	2·060–2·310	2·211±0·089
Hf	16	0·475–0·590	0·521±0·036	6	0·490–0·540	0·520±0·018
Ht	16	0·985–1·240	1·082±0·078	6	0·995–1·180	1·105±0·047
t_1	16	0·230–0·330	0·282±0·025	6	0·280–0·375	0·318±0·034
t_2	16	0·117–0·143	0·130±0·007	6	0·123–0·136	0·132±0·006
A	11	2·110–2·510	2·328±0·134	1	2·845	.
f_1	15	0·465–0·630	0·531±0·039	4	0·565–0·630	0·594±0·030
f_2	14	0·365–0·440	0·394±0·025	2	0·431–0·464	.
Ratio t_1/t_2	16	1·94–2·32	2·16±0·123	6	2·11–2·76	2·40±0·209
Ratio f_1/f_2	14	1·23–1·47	1·35±0·065	2	1·31–1·36	.

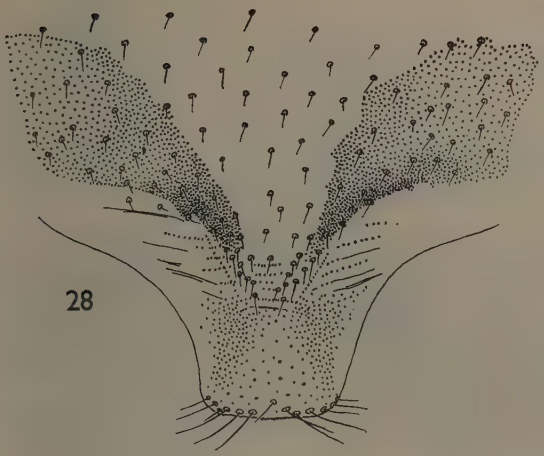
Male

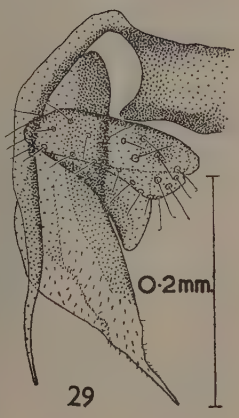
Coloration (freshly killed, in alcohol).—As female.

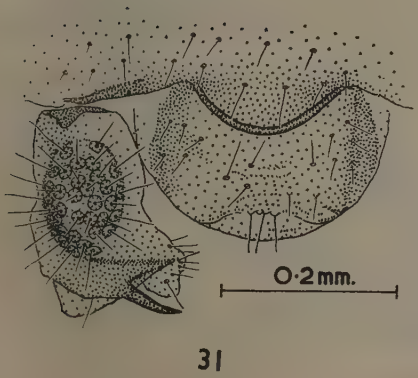
Morphology.—I.O.: D = 0·8 : 1. Basal segment of flagellum about half as wide again as that of female ; length of setae three times greatest width of segment.

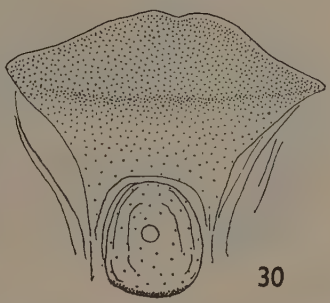
Number of ctenidiobothria on proximal hind tarsal segment : 20–23 ; on distal segment : 3 (6 specimens).

Genitalia : hypandrium (fig. 33) basally symmetrical, angular, with lateral tracts of small denticles leading to large serrated pegs, a slightly asymmetrical apical sclerite bearing a crown of sharp spines ; phallic frame (fig. 32) closed, small lateral projections near anterior end, well sclerotised posteriorly.









FIGS. 27–31.—*Trichadenotecnum nudum* sp. n. (27–30) Female : (27) fore wing ; (28) subgenital plate ; (29) gonapophyses ; (30) gonopore plate. (31) Male, apex of abdomen. (Figs. 28–30 have common scale.)

Apex of abdomen (fig. 31): epiproct without anterior flap; paraprocts with short, fairly straight apical spine, an oval field of 35 trichobothria; ninth tergite without lateral extensions but with a curved median lip overlapping epiproct.

Dimensions.—Body length (in alcohol): 2·1 mm. Antenna longer than in female. Dimensions of various characters are given in Table IV.

Hong Kong Island: xi.56; xi, xii.57; i, ii, iii, xi, xii.58; xi.59. On *Pinus massoniana*, *Quercus championi*, *Quercus myrsinaefolia*, *Gnetum scandens*. Frequent.

Although the male genitalia of *T. nudum* are unlike those of any other described species in the complex, the markings and venation of the fore wing suggest some relationship to the *Trichadenotecnum* s. str. group of species. The absence of the hypandrial tongue is again noteworthy.

Trichadenotecnum pardidum sp. n.

Female

Coloration (freshly killed, in alcohol).—Head buff, markings brown. Vertex with distinct markings of brown spots. Postclypeus pale buff, brown striae of confluent spots merge medially towards anterior margin into a brown patch. Anteclypeus and labrum dark brown. Genae pale buff, a well-defined narrow brown band bordering eye, antennal socket bordered brown, a brown patch posterior to this merging with brown border to eye, light brown patch in lower half of gena. Antennae with scape and pedicel brown, first flagellar segment light brown darkening distally, rest of flagellum brown, paler at joints. Eyes black. Maxillary palpi dark brown, apical segment very little darker than rest.

Mesothorax: antedorsum brown, pale cream band along posterior margin; dorsum brown, pale cream along posterior margin and midline, pale cream marks extending from median suture antero-laterally on to dorsal lobes producing a broad Y-shape; scutellum brown, anterior suture dark. Metathorax: antedorsum pale cream; dorsum brown, pale cream in mid-line, small oval cream patch in middle of each dorsal lobe posteriorly; scutellum brown, anterior suture dark. Thoracic pleura dark brown. Legs: coxae brown; trochanters brown basally fading distally; prothoracic femur pale with broad brown band near basal end, fainter patch near distal end, meso- and metathoracic femora brown; tibiae light brown fading distally; proximal tarsal segments light brown, second segments brown. Fore wing (fig. 36) clouded and spotted in shades of brown; hind wing hyaline.

Abdomen: yellowish-cream, narrow dark granulated transverse bands dorsally, merging in posterior half of abdomen laterally; broader bands on sterna. Apical sclerites dark brown.

Morphology.—I.O.: D = 2·8 : 1. Antennal flagellum sparsely setose, length of setae on basal segment only slightly greater than greatest width of segment.

Fore wing (fig. 36) with cu_1 reflexed, *rs* and *m* fused for a short distance. Number of ctenidiobothria on proximal hind tarsal segment: 17; on distal segment: 2 (1 specimen).

Subgenital plate (fig. 34): apical lobe with a marginal row of long setae, well sclerotised except posteriorly and medially, a group of very small setae centrally; main plate with sharply-defined sclerotised areas, a bare median unsclerotised area anteriorly, two long setae just posterior to sclerotised area of apical lobe; lining membrane with two oval areas of roughly concentric sclerotised ridges.

Gonapophyses (fig. 35): ventral valve very short, outer valve with row of short spines posteriorly and without posterior lobe.

Epiproct with three or four layered composition.

Dimensions.—Body length (in alcohol): 2·0 mm. Dimensions of other characters as in Table V.

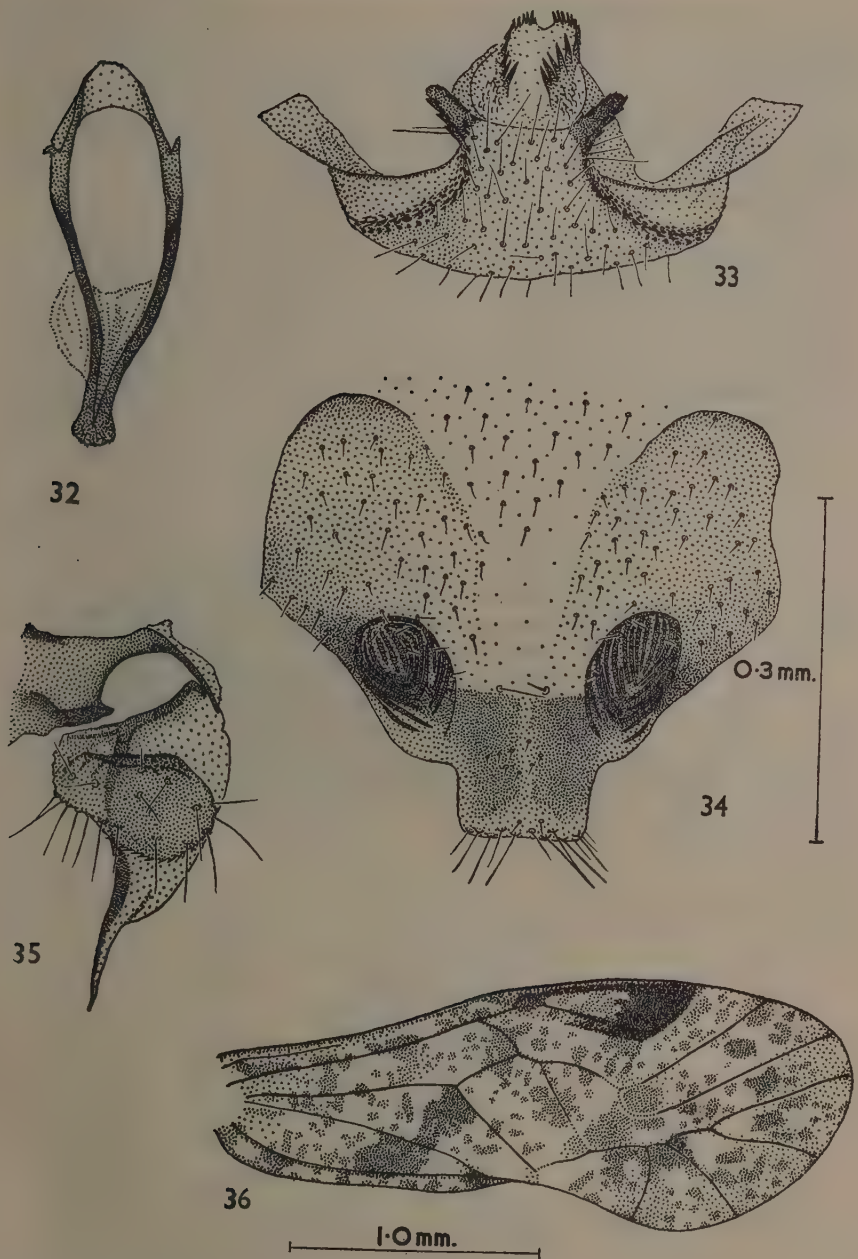
Male

Unknown

Hong Kong Island: xi.57. On *Pinus massoniana*, one female only.

The single specimen of *T. pardidum* shows remarkable similarities to *T. pardus* (*see* Badonnel, 1955).

The two species agree in the following genitalic characters: ventral valve short; outer valve without posterior lobe and with posterior edge beset with spinelets;



Figs. 32–36.—(32–33) *Trichadenotecnum nudum*, male : (32) phallosome ; (33) hypandrium, posterior view. (34–36) *Trichadenotecnum pardidum* sp. n., female : (34) subgenital plate ; (35) gonapophyses ; (36) fore wing. (Figs. 32–35 have common scale.)

general pattern of sclerotisation of subgenital plate; a pair of oval sclerotised areas on the membrane underlying the subgenital plate. They differ slightly in that the sclerotisations of the subgenital plate lining membrane of *T. pardidum* are much heavier than those of *T. pardus*, and are not spiral in form. There is a slight difference in pattern of sclerotisation of the subgenital plate, and the spinelets on the outer valve of the gonapophyses of *T. pardus* are sparser than those of *T. pardidum*. Moreover, a field of smaller, blunter spinelets on the anterior edge of the outer valve of the Hong Kong specimen is not mentioned or figured by Badonnel.

Mr. J. V. Pearman has kindly sent me drawings and notes of a specimen in his possession from Réunion which is very close indeed to *T. pardus*. It differs in that, like *T. pardidum*, it has a field of minute denticles on the anterior area of the outer valve, and the epiproct is three-layered. Moreover, the dark areas of the subgenital plate are less extensive than those of *T. pardus* and its lining sclerotisations are in concentric rings, not spirals. The wings are slightly smaller than those of *T. pardus*, and the subapical spots discernible. Pearman's specimen differs from *T. pardidum* in that there are no spines on the posterior margin of the outer valve but about eight along the apical margin, and the lining sclerotisations of the subgenital plate are in the form of more regular concentric rings.

The question of whether these slight variations indicate the existence of three species or three geographical races of one species, or whether they are within the range of individual variation of one species, cannot be satisfactorily answered until more specimens have been collected from all three areas (Badonnel has two females from Angola, Pearman one from Réunion). On the basis of the small yet numerous differences between the Hong Kong and Angola specimens I have provisionally given the Hong Kong insect the status of a separate species.

Whatever is eventually decided about the final specific or subspecific status of these four specimens, it seems clear that they represent a somewhat aberrant group, possibly of generic rank. They possess common peculiarities of female genitalia, which are usually conservative characters, in the very short ventral valve and lateral valve without posterior lobe, features which are found nowhere else in this group of species except in *T. circularoides* Badonnel (1955), which differs from them in fore wing pattern and venation.

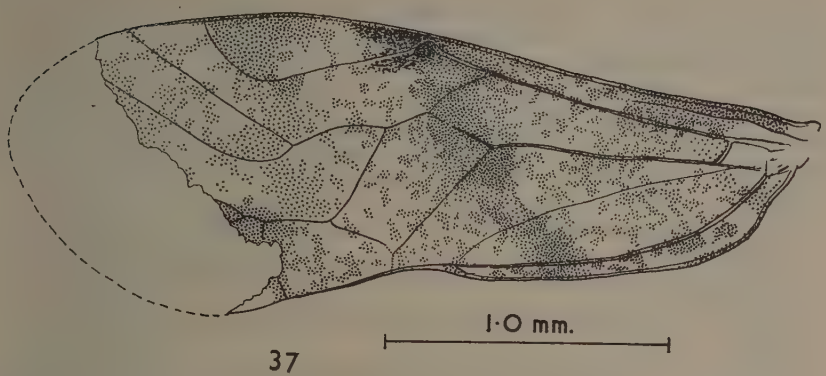
TABLE V.—*Length (in mm.) of various characters of* Trichadenotecnum arciforme (*male*), T. pardidum (*female*), *and* T. felix (*male*)

	T. arciforme (male)	*T. pardidum* (female)	*T. felix* (male)
Fw . .	3·580	2·590	.
Hw . .	2·680	1·960	2·010
Hf . .	0·595	0·430	0·520
Ht . .	1·350	0·885	1·095
t_1 . .	0·375	0·260	0·310
t_2 . .	0·112	0·076	0·136
A . .	.	2·700	.
f_1 . .	0·750	0·435	.
f_2 . .	0·735	0·410	.
Ratio t_1/t_2 .	3·35	3·39	2·27
Ratio f_1/f_2 .	1·02	1·06	.

Trichadenotecnum felix sp. n.

Male

Coloration (freshly killed, in alcohol).—Vertex brown with dark brown markings vaguely discernible, a white spot anteriorly either side of ocellar protuberance. Frons white with complex brown pattern. Ocellar protuberance almost black, ocelli pale. Postclypeus white posteriorly with striae of distinct dark brown spots, wholly brown in anterior three-quarters. Anteclypeus and



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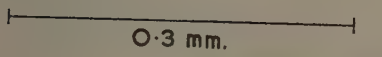

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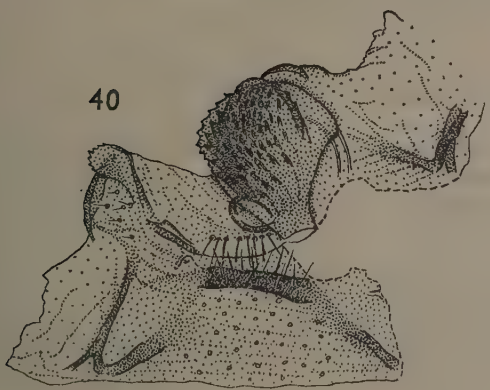

FIGS. 37–40.—*Trichadenotecnum felix* sp. n., male : (37) fore wing (damaged) ; (38) epiproct and left paraproct ; (39) phallosome ; (40) hypandrium (torn). (Figs. 38–40 have common scale.)

labrum dark brown. Genae greyish-brown, dark brown round antennal socket and along anterior margin. Antennae with scape dark brown, pedicel brown fading to white distally, first flagellar segment very pale, almost white basally, shading to brown apically, rest of flagellum brown. Eyes dark purplish-brown. Maxillary palpi wholly brown.

Mesothorax: terga dark brown, a thin white line on antedorsum medially. Metathorax: terga brown, a pale buff mark on posterior edge of each dorsal lobe. Thoracic pleura dark brown. Meso- and metathoracic legs brown (metathoracic legs darker), white at joints; prothoracic legs with coxae dark brown, femora almost colourless, tibiae brown, pale apically, tarsi brown. Fore wing (fig. 37) markings dark brown proximally including wide transverse band, markings brown distal to this; proximal end of pterostigma white by reflected light.

Abdomen dorsally brown, posterior edge of each tergum dark brown; ventrally buff, hypandrium dark brown.

Morphology.—Antennal flagellum with very long setae, length of setae on basal segment seven times greatest width of segment.

Number of ctenidiobothria on proximal hind tarsal segment: 17; on distal segment: 2 (1 specimen).

Genitalia: hypandrium (fig. 40) basally symmetrical, distally at right with large asymmetrical tongue, serrated on mesial margin, overlaying large sclerotised mound beset with rows of spines, at left of margin a smaller serrated sclerotisation; phallosome (fig. 39) closed, with an apical transverse sclerite, lightly sclerotised anteriorly, with lateral extensions.

Apex of abdomen (fig. 38): epiproct well sclerotised anteriorly, with anterior dorsal flap supported by sclerotised bars; paraprocts setose and well-sclerotised in apical half, with large apical hook, two separate trichobothrial fields of 12 and 14 trichobothria.

Dimensions.—Dimensions of various characters are given in Table V.

Female

Unknown.

Hong Kong Island: v.60. One male only, flew into private house, wings damaged.

I have described this species on the basis of one damaged specimen because the fore wing is sufficiently intact to show that it belongs to this group of species, and yet it possesses two peculiar characteristics. Although the hypandrium was slightly torn in the preparation, it is evident that the hypandrial tongue is asymmetrical. The separate trichobothrial fields on the paraproct have not been described before in any species of the group, and recall the condition in species of *Psocidus* s. str. (*see* Thornton, 1960).

Key to Hong Kong species of Trichadenotecnum (sensu *Roesler*)

Females

1 Fore wing with small spots in proximal half, apical lobe of subgenital plate clearly marked off from disc 2
– Fore wing without small spots in proximal half, apical lobe of subgenital plate not clearly marked off from disc . . . . . **nudum***
2 Small spots in fore wing numerous, large submarginal spots not prominent; ventral valve of gonapophyses at least half as long as dorsal valve, or if very short, outer valve has no posterior lobe 3
– Small spots in fore wing sparse, large submarginal spots prominent, ventral valve of gonapophyses very short, outer valve with posterior lobe . . **apertum***
3 Outer valve of gonapophyses with posterior lobe, subgenital plate without oval lining sclerotisations 4
– Outer valve of gonapophyses without posterior lobe; subgenital plate with oval lining sclerotisations . . . . . **pardidum***
4 Lobe of subgenital plate with prominent " shoulders ", disc without separate median sclerotised area . . . . . **bidens***
– Lobe of subgenital plate evenly narrowing apically, without " shoulders ", disc with separate median sclerotised area . . . . . **medium***

Males

1 Fore wing without small spots in proximal half; epiproct without anterior dorsal flap; hypandrial tongue lacking 2
– Fore wing with small spots in proximal half; epiproct with anterior dorsal flap; hypandrial tongue present or absent 3
2 Submarginal spots in fore wing distinct, small; hypandrium evenly tapering to apex; ninth tergite of abdomen with lateral extensions . . . **arciforme***
– Submarginal spots of fore wing not apparent, or if so large; hypandrium angular, not evenly tapering to apex; ninth abdominal tergite without lateral extensions . . . . . **nudum***
3 Small spots in fore wing very sparse; hypandrial tongue lacking; phallic frame open apically . . . . . **apertum***
– Small spots in forewing numerous; hypandrial tongue present; phallic frame closed 4
4 Hypandrium symmetrical; extensions of ninth abdominal tergite long, sharply pointed . . . . . **bidens***
– Hypandrium asymmetrical; extensions of ninth abdominal tergite absent, or if present, short, blunt 5
5 Hypandrial tongue asymmetrical, phallosome with a single basal cross-bar, lateral extensions small . . . . . **felix***
– Hypandrial tongue symmetrical, phallosome with a pair of large lateral extensions . . . . . **medium***

* Described above as new.

The above key is purely utilitarian and is not intended to suggest relationships.

III. Discussion

One of the characteristics of *Trichadenotecnum* End. is generally regarded as being the possession of a hypandrial tongue (*see* Sommerman, 1948) and if this character is to be given prime importance, then *T. bidens*, *T. medium* and *T. felix*, which possess it, must be regarded as being more closely related to each other than to any of the other species dealt with here. The pattern of pigmentation of their fore wings is also generally similar.

On the other hand, on structure of phallosome and hypandrium (disregarding presence or absence of a tongue) *T. apertum* would seem to have something in common with *T. medium*, and *T. arciforme* with *T. bidens*. *T. nudum* and *T. pardidum* do not seem to be closely related to any of the other species described here, nor to each other.

The fact that only two of the seven Hong Kong species are even approximately referable to any of the subgenera or species groups recognisable from a study of palaearctic material emphasises the inadequacy of even Roesler's subgenera to cater for tropical species. Apart from the species described here, some of the African species fall outside the categories erected from a study of European material, and it seems likely that when the North American Psocidae have been revised there will be difficulty in placing some of them.

There is no doubt that the taxonomic situation with regard to this assemblage will have to be revised on a world basis after the completion of the revision of North American Psocidae, and it is probable that it may then be accorded at least subfamily rank. Meanwhile, I have thought it advisable to refer new, even aberrant, species to *Trichadenotecnum* sensu Roesler.

IV. Location of Material

The specimens upon which this work is based were all collected by the author. The material examined and location of type material is given below for each species.

Trichadenotecnum medium

British Museum (Nat. Hist.): holotype ♀ (dissected, tube 212*a*, slides 212.1, 212.2, 212.3) beaten from *Pinus massoniana* near Pokfulam Reservoir, Hong Kong Island, 10.iii.58; allotype ♂ (dissected, tube 212*b*, slides 212.4, 212.5, 212.6), same collection data and date.

In author's collection for the present, the following paratypes: 1 ♀, from *Pinus massoniana*, Chung Hum Kok, Hong Kong Is., 5.xii.57; 1 ♂, 1 ♀, from *P. massoniana*, near Pokfulam Reservoir, Hong Kong Is., 17.xii.57; 1 ♀, same collection data, 30.xii.57.

Trichadenotecnum bidens

British Museum (Nat. Hist.): holotype ♀ (dissected, tube 279, slides 279.1, 279.2, 279.3) from *Gnetum scandens*, Peak (390 m.), Hong Kong Is., 17.xi.58; allotype ♂ (dissected, tube 287, slides 287.1, 287.2, 287.3) beaten from *Sterculia lanceolata*, Peak (400 m.), Hong Kong Is., 27.xi.58.

In author's collection, the following paratypes: 1 ♀, same collection data and date as holotype ♀; 1 ♂, same collection data and date as allotype ♂; 1 ♀, Hatton Rd., Hong Kong Is., 8.i.58; 2 ♂, 4 ♀, same collection data as allotype ♂, 19.xii.58.

Trichadenotecnum apertum

British Museum (Nat. Hist.): holotype ♀ (dissected, tube 136*a*, slides 136.1, 136.2, 136.3) from *Pinus massoniana*, near Pokfulam Reservoir, Hong Kong Is., 30.xii.57; paratype ♀ (dissected, tube 61, slides 61.1, 61.2, 61.3) same collection data, 11.xi.57; allotype ♂ (dissected, tube 316, slides 316.1, 316.2) from *Pinus massoniana*, Peak (400 m.), Hong Kong Is., 19.xii.58; paratype ♂ (dissected, tube 292, slides 292.1, 292.2, 292.3) from *Podocarpus macrophylla*, same locality, 27.xi.58.

In author's collection, the following paratypes: 1 ♀, from *Pinus massoniana* near Pokfulam Reservoir, Hong Kong Is., 30.xii.57; 1 ♂ from *Litzea chinensis*, Peak (400 m.), Hong Kong Is., 27.xi.58; 1 ♀ from *Pinus massoniana*, Peak (400 m.), Hong Kong Is., 19.xii.58; 1 ♂ from *Casuarina equisetifolia*, Mt. Davis (60 m.), Hong Kong Is., 1.iv.60.

Trichadenotecnum arciforme

British Museum (Nat. Hist.): holotype ♂, (dissected, tube 126, slides 126.1, 126.2, 126.3) beating broad-leaved shrubs, Hatton Road, Hong Kong Is., 8.i.58.

Trichadenotecnum nudum

British Museum (Nat. Hist.): holotype ♀ (dissected, tube 156*a*, slides 156.1, 156.2) beating broad-leaved shrubs, Hatton Rd., Hong Kong Is., 8.i.58; paratype ♀ (dissected, slides 57.1, 57.2) from *Pinus massoniana* near Pokfulam Reservoir, Hong Kong Is., 11.xi.57; allotype ♂ (dissected, tube 156*b*, slides 156.3, 156.4) same data and date as holotype.

In author's collection, the following paratypes: 1 ♂, from *Quercus championi*, Peak (410 m.), Hong Kong Is., 17.xi.56; 3 ♀, from *Pinus massoniana*, near Pokfulam Reservoir, Hong Kong Is., 11.xi.57; 1 ♀, same collecting data, 17.xii.57; 3 ♂, 2 ♀, same collecting data, 30.xii.57; 1 ♀, same collecting data, 10.iii.58; 1 ♂, 4 ♀, beating broad-leaved shrubs, Hatton Rd., Hong Kong Is., 8.i.58; 1 ♀ from *Pinus massoniana*, Chum Hum Kok, Hong Kong Is., 7.ii.58; 1 ♀, same collecting data, 20.ii.58; 1 ♀, same collecting data, 28.v.60; 1 ♂, 2 ♀, from *Gnetum scandens*, Peak (350 m.), Hong Kong Is., 17.xi.58; 1 ♀ from *Pinus massoniana*, Stubbs Rd. (340 m.), Hong Kong Is., 25.iv.60.

Trichadenotecnum pardidum

British Museum (Nat. Hist.): holotype ♀ (dissected, tube 62, slides 62.1, 62.2, 62.3) from *Pinus massoniana*, near Pokfulam Reservoir, Hong Kong Is., 11.xi.57.

Trichadenotecnum felix

British Museum (Nat. Hist.): holotype ♂ (dissected, tube 462, slides 462.1, 462.2) flew into author's house, Mt. Davis, Hong Kong Is., 2.v.60.

V. Summary

Seven new species from Hong Kong are described and provisionally referred to *Trichadenotecnum* sensu Roesler. They are *T. medium*, *T. bidens*, *T. apertum*, *T. arciforme*, *T. nudum*, *T. pardidum* and *T. felix*. A key to these Hong Kong species is provided.

Most of the new species are not closely related to any known forms, except *T. pardidum*, which is closely similar to *T. pardus* Badonnel. It is pointed out that, when the *Trichadenotecnum* group as a whole is revised on a world basis, some of these species may be found to typify new generic forms.

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